

<i>Daily estimated allowance</i>		<i>Calories</i>	<i>Cost</i>
1 Orange or Orange Juice	1	56	.0346 cents
Oatmeal .....	$\frac{3}{4}$ cup, cooked	100	.0019 "
Bread .....	12 oz.	960	.0276 "
Sugar .....	2 $\frac{1}{2}$ oz.	300	.0087 "
Milk .....	1 quart	672	.1100 "
Butter .....	1 $\frac{1}{2}$ oz.	340	.0384 "
Lamb Chop .....	8 oz.	850	.1200 "
or			
Fish .....	8 oz.	300	.0270 "
Potato .....	8 oz.	260	.0136 "
Fresh Spinach .....	8 oz., as purchased	44	.0600 "
or			
Tomatoes .....	3 oz.	30	.0123 "
Egg .....	1	80	.0288 "
Prunes, dry .....	2 oz., as purchased	160	.0102 "
Crackers .....	1 oz.	100	.0075 "
Custard .....	4 oz.	174	.0245 "
		{ Milk, 4 oz.	
		{ Sugar, $\frac{1}{2}$ oz.	
		{ Egg, $\frac{3}{8}$ oz.	
Total calories using chop and spinach.....		4,096	.4858 cents
Total calories using fish and tomatoes.....		3,532	.3451 "

The nurses in the diet kitchen consider a fair deduction is 500 calories for each child; part of this is taken by older children and some no doubt is wasted.

Langworthy, U. S. Department of Agriculture, calculates that a man without work requires 2,450 calories; with light work 2,700 calories.

### *Section of Surgery, February 4, 1927*

## TREATMENT OF ACUTE SUPPURATIVE PLEURISY IN CHILDREN

JOHN V. BOHRER

Suppurative Pleurisy in children presents a difficult problem. It is essentially a secondary disease, a child's vitality having already been depleted by primary pneumonia. Complications such as acute otitis media or recurrence of pneumonia, especially in cold windy months, are very common, and this markedly increases the severity of the disease and in infants (those under two years of age) this disease is particularly severe. The older text books

of pediatrics state that the mortality in suppurative pleurisy in infants under one year of age is one hundred per cent. Fortunately this is not the case at present. In our series the youngest patient operated on for suppurative pleurisy was three weeks old. This patient recovered as did many others in the infant group.

The plan of treatment should fulfil the following requirements, and in so far as it yields good results must be accepted as satisfactory:

1. Proper treatment of the primary disease with early recognition of the suppurative pleurisy.
2. Low mortality.
3. Minimum anatomical and physiological deformity.
4. Prevention of complications.
5. Early restoration to health.

In the formative stage, if there is distress, repeat aspiration as often as necessary. In a few instances, in streptococcus cases, where the re-accumulation of pus is very rapid, the air-tight syphon drainage or suction method is used, but this is not entirely satisfactory; repeated aspiration is the better plan.

When the fluid is frank pus, and, as is often the case, the temperature from the pneumonia has abated, open drainage is instituted.

Intercostal drainage with the so-called "flapper tube" is the method used. A "flapper tube" is made by fitting a glove finger (one that has been softened by repeated sterilization) on the distal end of a fenestrated rubber tube as a projection, the tube having been cut with a sixty-degree bevel, forming a valve that readily allows fluid and air to escape with expiration, but which closes with inspiration. This is an aid in lung expansion, as it tends to restore the negative intra-pleural pressure, and is of use in irrigating at the time of dressing, as it forms a funnel through which irrigating fluid is passed into the chest cavity.

The operative procedure in a suppurative pleurisy is always done with local anesthesia. The patient, if not too sick, is allowed to sit up; cooperation is more likely to be had in this position.

A small incision is made in the seventh intercostal space near the mid-axillary line. Naturally the site of the incision varies

with the location of the pus. A "flapper tube" is introduced and the pus allowed to run out. The tube is held in place by one silk-worm stitch. At no time have there been any disturbing symptoms caused by completely evacuating the cavity at operation. Irrigation is started in the next few days, the exact time depending on the condition of the patient and the amount and character of the drainage. Usually on the fourth day the cavity is irrigated, the patient reclining with wound uppermost. Saline is introduced through the "flapper tube," the measured amount determining the size of the cavity. If no coughing is produced, Dakin's solution is then used cautiously. If there is no "gassing" the cavity is now daily cleansed by thorough irrigation with Dakin's solution. This daily irrigation is not an attempt to sterilize the cavity, but is sufficient to keep thin and to deodorize the discharge.

When judged by temperature, appetite, type of discharge and general condition it is found that the patient has not materially improved at the end of eight or ten days, and there is no acute otitis media or recurrence of pneumonic process, we conclude that we are dealing with a complicated form of suppurative pleurisy, such as multiple loculi or a markedly thickened pleura preventing complete drainage, and exploratory thoracotomy is done.

Under light ether or gas anesthesia, an intercostal incision long enough to give proper exposure is made and rib spreaders introduced. If more exposure is required, a rib may be cut at one or both ends and telescoped, giving the desired extra exposure. This gives the advantage of seeing and under visual guidance dividing vicious adhesions, doing a partial decortication or any other procedure necessary, thus converting multiple loculi into a single cavity, or placing drainage where it is needed. This may appear radical surgery, but properly done it produces little shock and reduces mortality, shortens convalescence and causes no deformity.

The order of treatment in suppurative pleurisy is, first, adequate drainage; second, skilful nursing and high caloric diet; third, blood transfusion.

Only whole blood, by the Lindemann method, is given. With whole blood, accurately matched and given in proper amounts, reactions are seldom seen.

It is very difficult to make a classification of suppurative pleurisy cases, but for clinical purposes they may be divided into three groups:

- a. Cases having good prognosis.
- b. Cases having poor prognosis.
- c. A middle group whose prognosis is largely dependent upon the kind of treatment received.

a. *Good prognosis.*

In this clinical grouping about forty per cent. of the patients come under the heading of good prognosis. By this is meant where the patient has inherited a healthy constitution, has been surrounded by fair conditions during health, where the primary disease was promptly and properly diagnosed and treated, and which developed encapsulated suppurative pleurisy, which in turn was promptly diagnosed and received proper care during the formative period of the disease. Such patients will recover if they are given adequate drainage by any of the methods advocated. The period of invalidism will be minimum. The type of organism is a minor matter. Recovery statistics in this group are very gratifying.

b. *Poor prognosis.*

In this group our series at Bellevue Hospital shows about twenty-five per cent. Through the Social Service Department we have found the living conditions included unhealthy parents, dirty, unsanitary homes, under-feeding and exposure. Rickets is almost universal. Add to this background a virulent infection, the primary disease improperly diagnosed, a starvation diet, and the child sent to the hospital only when in extreme condition. Such cases, with an encapsulated suppurative pleurisy, will often do surprisingly well if given adequate drainage and plenty of food. But in a patient with a virulent infection with complicated pleural involvement, or one who has already developed complications such as acute otitis media, or pneumonia of the opposite lung, the prognosis is universally bad regardless of the type of operative procedure.

c. *Middle group where prognosis is largely dependent upon surgical procedure.*

The remaining thirty-five per cent. fall into this group. In this class, where the background has been only fair, the treatment of

the primary disease good, but the infection virulent, the surgical treatment largely determines the ultimate outcome.

One hundred and fifty-four children's cases are here reported covering a five-year period from 1919 to 1924, inclusive. These children, ranging from infancy to twelve years of age, were admitted to Bellevue Hospital on Children's Surgical Service. These cases were divided into age groups for a statistical study. The first or infant group includes all children under two years of age; the second from two to six years, and the third from six to twelve years. The mortality of the first or infant group, forty-eight cases, is 35.4 per cent. For the second group, seventy-three cases, it is 10.9 per cent. For the third group, thirty-three cases, it is 3.3 per cent. The mortality for the entire series of a hundred and fifty-four cases is 16.8 per cent.

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*Section of Surgery, February 4, 1927*

## THE CONTROL OF POST-OPERATIVE HEMORRHAGE FOLLOWING NEPHRECTOMY FOR REMOVAL OF RENAL CALCULI

DOUGAL BISSELL

Ureterotomy for the removal of renal calculi has certain advantages, but should the ureteral incision fail to heal, one is driven to the necessity of removing the kidney.

Ureteropyelolithotomy was resorted to by the author from 1901 to 1916 in cases of renal calculi. In the latter year there came under his care a patient with a stone in the renal pelvis of considerable size. This stone was removed through an opening made in the upper ureter, but its delivery caused an irregular extension of the incision which was difficult to repair, and it became infected, with a resulting persistent fistula. Nephrectomy was finally necessitated. This unfortunate outcome directed the author's attention to the development of a nephrectomy technique for the removal of renal calculi with less liability to urinary fistula, and provision for the control of renal hemorrhage. The fea-